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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/536,490

05/25/2005

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EXAMINER

HINES, ANNE M

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/536,490	Applicant(s) OKAFUJI ET AL.	
	Examiner ANNE M. HINES	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 19-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/25/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Claims 1-10 and 19-25 in the reply filed on July 24, 2008 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimoto et al. (US 6677704) in view of Wedding (US 7157854).

Regarding claim 1, Ishimoto teaches an image display apparatus in which a plurality of narrow tubes are disposed so as to extend across a substrate (Fig. 1, 10; Column 4, line 47), each narrow tube containing phosphor material (Fig. 1, 16; Column 3, line 60) and enclosing discharge gas (Column 1, lines 22-23), the image display apparatus displaying an image by applying voltages to the narrow tubes so as to cause discharges to occur therein, and converting ultraviolet light generated as the discharges occur into visible light via the phosphor material, wherein, the plurality of narrow tubes include at least one first narrow tube and at least one second narrow tube, and the phosphor materials respectively contained in the first and second narrow tubes differ from each other (Column 4, lines 55-60). Ishimoto fails to teach wherein the discharge

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gases respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure.

In the same field of endeavor, Wedding teaches wherein the discharge gases respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure in order to optimize the gas pressure and composition for each phosphor (Column 14, lines 56-59).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ishimoto to have the gas pressure and composition in each tube differ from one tube to another in order to optimize the gas pressure and composition for each phosphor, as disclosed by Wedding.

Regarding claim 2, Ishimoto further discloses wherein the phosphor material forms a layer in each first and second narrow tube, respectively (Fig. 1, 16; Column 3, line 60).

Regarding claim 3, Ishimoto further discloses a plurality of first electrodes arrayed so as to extend in a length direction of the narrow tubes (Fig. 1, 13; Column 3, line 43), and a plurality of second electrodes arrayed so as to extend in a direction which intersects the length direction of the narrow tubes (Fig. 1, 11; Column 3, line 43).

Regarding claim 4, Ishimoto further discloses wherein the plurality of first electrodes are provided between the substrate and the narrow tubes (Fig. 1, 13; Column 3, line 43).

Regarding claim 5, Ishimoto further discloses wherein the plurality of second electrodes are attached to the plurality of narrow tubes (Fig. 1, 11; Column 3, line 43).

Regarding claim 6, Ishimoto further discloses a secondary emission layer formed inside each tube (Fig. 1, 14; Column 3, lines 54-56), but is silent regarding the composition of the secondary emission layer. In the same field of endeavor, Wedding teaches a secondary emission layer inside each tube is composed of magnesium oxide in order to facilitate discharge within the tube (Column 6, lines 61-63). Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ishimoto to have the secondary emission layer be magnesium oxide in order to facilitate discharge within the tube, as disclosed by Wedding.

Regarding claims 7 and 20-24, Ishimoto further discloses wherein the phosphor material contained in the first narrow tube is of at least one color selected from red, green, and blue, and the phosphor material contained in the second narrow tube is of at least one color than the at least one color selected for the phosphor contained in the first narrow tube (Column 4, lines 55-60).

Claims 8, 10, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimoto et al. (US 6650055) in view of Wedding (US 7157854).

Regarding claim 8, Ishimoto teaches an image display apparatus in which a pair of substrates are disposed opposite one another such that an internal space is formed therebetween (Fig. 1, 21 & 22; Column 4, line 52), electrodes (Fig. 1, 2 & 3; Column 4, lines 49-50) and phosphor layers (Fig. 1, 4; Column 4, line 50) are provided between

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the substrates, and discharge gas (Abstract) is enclosed in the internal space, the image display apparatus displaying an image by applying voltages to the electrodes so as to cause discharges to occur in the internal space, and via the phosphor material, converting ultraviolet light generated as discharges occur into visible light, wherein the internal space is divided into a first space provided with a first phosphor layer and a second space provided with a second phosphor layer (Fig. 1, 4). Ishimoto fails to teach wherein the phosphor layers include at least two types of phosphors and the discharge gases respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure.

In the same field of endeavor, Wedding teaches wherein the discharge tubes include red, green, and blue phosphors in order to form a full color display device (Fig. 5; Column 9, lines 7-16) and wherein the discharge gases respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure in order to optimize the gas pressure and composition for each phosphor (Column 14, lines 56-59).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ishimoto to have the phosphors be red, green, and blue in order to form a full color display device and to have the gas pressure and composition in each tube differ from one tube to another in order to optimize the gas pressure and composition for each phosphor, as disclosed by Wedding.

Regarding claim 10, Wedding further teaches wherein the first phosphor is of at least one color selected from red, green, and blue, and the second phosphor layer is of at least one color other than the at least one color selected for the first phosphor layer (Fig. 5; Column 9, lines 7-16). Motivation to combine is the same as for claim 8.

Regarding claim 19, Ishimoto teaches an image display vessel comprising an outer vessel forming step of forming an outer vessel in which a pair of substrates are disposed opposite one another such that an internal space is formed therebetween (Fig. 1, 21 & 22; Column 4, line 52), electrodes (Fig. 1, 2 & 3; Column 4, lines 49-50) and phosphor layers provided between the substrates (Fig. 1, 4; Column 4, line 50), and a discharge gas is enclosed in the internal space (Abstract), the internal space divided into a first space provided with a first phosphor layer and a second space provided with a second phosphor layer (Fig. 1, 4; Column 4, line 50), and first and second exhaust tubes connecting to the first and second spaces respectively are provided (Fig. 1, 1; Column 4, line 49), and an exhausting-enclosing step of, via the first and second exhaust tubes respectively, exhausting the first and second spaces and enclosing discharge gas therein (Fig. 1, 1; Column 4, line 49). Note that, since Ishimoto discloses the tubes 1 being filled with discharge gas the Examiner considers this to characteristically disclose an exhausting and enclosing step for the discharge gas and the tubes, 1, both connect to and divide the internal spaces between the substrates. Ishimoto fails to teach wherein the phosphor layers include at least two types of phosphors and the during the exhausting-enclosing step the discharge gases

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respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure.

In the same field of endeavor, Wedding teaches wherein the discharge tubes include red, green, and blue phosphors in order to form a full color display device (Fig. 5; Column 9, lines 7-16) and wherein the discharge gases respectively enclosed in the first and second narrow tubes differ from each other in at least one of composition and pressure in order to optimize the gas pressure and composition for each phosphor (Column 14, lines 56-59).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Ishimoto to have the phosphors be red, green, and blue in order to form a full color display device and to have the gas pressure and composition in each tube differ from one tube to another in order to optimize the gas pressure and composition for each phosphor, as disclosed by Wedding.

Claims 9 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimoto et al. (US 6650055) and Wedding (US 7157854) in view of Shinoda et al. (US 6633117).

Regarding claim 9, Ishimoto and Wedding teach the invention of claim 8, including wherein a plurality of separate discharges spaces are provided between the substrates by a plurality of round cross-sectional tubes that form grooves that are closed at one end, but fail to teach wherein they are separated by a plurality of barrier ribs that are provided in a stripe pattern.

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In the same field of endeavor, Shinoda discloses wherein the discharge spaces are dividers are provided as either round cross-sectional tubes (Fig. 16a) or rectangular cross-sectional tubes thereby forming grooves separated by barrier ribs in a stripe shape (Fig. 16b), thus exemplifying recognized equivalent structures of the discharge space dividers in the art.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the dividers of Ishimoto and Wedding as rectangular cross-sectional tubes instead of as circular cross-sectional tubes, since the selection of any of these known equivalents would be considered within the level of ordinary skill in the art as evidenced by Shinoda's teaching.

Regarding claim 25, Wedding further teaches wherein the first phosphor is of at least one color selected from red, green, and blue, and the second phosphor layer is of at least one color other than the at least one color selected for the first phosphor layer (Fig. 5; Column 9, lines 7-16). Motivation to combine is the same as for claim 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Hines whose telephone number is (571) 272-2285. The examiner can normally be reached on Monday through Friday from 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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